

In the Claims:

Please amend Claims 1, 11 and 20; and add Claim 29, all as shown below. Applicant respectfully reserves the right to prosecute any originally presented claims in a continuing or future application.

1. (Currently Amended) A storage medium including software system applications for providing access to web services, comprising:

~~a container driver that accepts an invoke request for a web service from a client wherein the invoke request is a web service message having a message format;~~

a protocol adapter that

~~intercepts the a web service invoke request wherein the invoke request is a web service message that has a message format and includes parameters,~~

~~converts the message format of the invoke request, and~~

~~creates an initial message context including the invoke request, a placeholder for a response, and information about a transport, and~~

~~routes the invoke request with the initial message context to an appropriate web services container based on a target of the invoke request;~~

~~wherein the protocol adapter then passes the invoke request with the initial message context to the container driver;~~

~~a container driver, at the web services container, that receives the invoke request and initial message context from the protocol adapter;~~

~~an a plurality of interceptors, utilized by the container driver to access inbound and outbound web service messages;~~

~~wherein the container driver forwards the initial message context to one of the plurality of interceptor interceptors that~~

~~receives the initial message context for the invoke request for the web service from said container driver, the initial message context including which includes a plurality of parts, wherein each part of which includes corresponding content, and~~

~~modifies the content of one or more of the parts of the initial message context to produce modified message context, and for the web service, the modified message context including the same plurality of parts as the initial message context but with the content of one or more parts differing from the initial message context~~

~~returns the modified message context to the container driver;~~

an invocation handler that receives the modified message context from said container driver, passes the parameters from the modified message context to the target of the request, processes values returned from the target, and passes the values to the container driver, such that the container driver can formulate a response to the invoke request; and

an invocation context that stores context data for processing the invoke request including a conversation ID, a message sequence number, and a security token, wherein the invocation context is an inheritable, thread local object which is accessible to the protocol adapter, interceptors and invocation handler, and wherein the invocation handler controls read/write access to the invocation context.

2. (Previously Presented) The storage medium of claim 1 wherein the client utilizes JAX-RPC to invoke the web services.

3. (Previously Presented) The storage medium of claim 1 wherein said container driver is adapted to perform any data binding and unbinding required to process the invoke request.

4-5. (Canceled)

6. (Previously Presented) The storage medium of claim 1, further comprising a plugin component to be used by said container driver to perform any data binding and unbinding.

7. (Canceled)

8. (Previously Presented) The storage medium of claim 1, wherein said invocation handler manages security policies, transaction management, and target object life cycle for the request.

9. (Previously Presented) The storage medium of claim 1, further comprising a web service container for hosting said container driver, said interceptor, and said invocation handler.

10. (Previously Presented) The storage medium of claim 1, further comprising a target object to which said invocation handler can delegate processing the invoke request.

11. (Currently Amended) A method for use in providing access to web services, comprising:  
~~accepting, at a container driver, an invoke request for a web service from a client;~~

intercepting [[an]] a web service invoke request from a web services client using a protocol adapter, wherein the invoke request is a web service message having a message format and wherein the invoke request includes parameters; and wherein the protocol adapter converting converts the message format of the invoke request by the protocol adapter;[.]

creating creates an initial message context including the invoke request, a placeholder for a response, and information about a transport; and

then passes routes the invoke request with the initial message context to [[the]] an appropriate web services container driver based on a target of the of the invoke request;  
receiving, at a container driver, the invoke request and the initial message context from the protocol adapter;

receiving forwarding the initial message context for the invoke request for a web service to one of a plurality of interceptors, wherein the plurality of interceptors are utilized by the container driver to access inbound and outbound web service message, and wherein the initial message context including includes a plurality of parts, wherein each of which part includes corresponding content;

modifying the content of one or more of the parts of the initial message context to produce modified message context for the web service, the modified message context including the same plurality of parts as the initial message context but with the content of one or more parts differing from the initial message context; and

returning the modified message content to the container driver;  
receiving the modified message context from the container driver at an invocation handler, wherein the invocation handler

passes the parameters from the modified message context to the target of the request,

processes values returned from the target, and  
passes the values to the container driver such that the container driver can formulate a response to the invoke request;

storing, in an invocation context, context data for processing the invoke request including a conversation ID, a message sequence number, and a security token, wherein the invocation context is an inheritable, thread local object which is accessible to the protocol adapter, interceptors and invocation handler, and wherein an invocation handler controls read/write access to the invocation context.

12. (Previously Presented) The method of claim 11 wherein a client utilizes JAX-RPC to invoke the web service.

13. (Original) The method of claim 11 wherein a container driver is used to perform any data binding and unbinding required to process the invoke request.

14. (Canceled)

15. (Previously Presented) The method of claim 11, wherein the receiving and modifying steps are performed using an interceptor.

16. (Previously Presented) The method of claim 11, further comprising providing the modified message context to the invocation handler that passes parameters from the modified message context to a target of the request, processes values returned from the target, and passes the values to a container driver, such that the container driver can formulate a response to the invoke request.

17. (Canceled)

18. (Original) The method of claim 11, further comprising managing life cycle, transaction, and security information for the processing of the invoke request.

19. (Original) The method of claim 11, further comprising delegating the processing of the invoke request to a target object.

20. (Currently Amended) A computer readable medium, including instructions stored thereon which when executed by the computer cause the computer to perform the steps of:

~~accepting at a container driver, an invoke request for a web service from a client;~~  
~~intercepting [[an]] a web service invoke request from a web services client using a protocol adapter, wherein the invoke request is a web service message having a message format and wherein the invoke request includes parameters; and wherein the protocol adapter~~  
~~converting converts the message format of the invoke request by the protocol adapter;[.]~~

creating creates an initial message context including the invoke request, a placeholder for a response, and information about a transport; and

then passes routes the invoke request with the initial message context to [[the]] an appropriate web services container based on a target of the invoke request driver;

receiving, at a container driver, the invoke request and the initial message context from the protocol adapter;

receiving, at an interceptor, forwarding the initial message context for the invoke request for the web service from the container driver to one of a plurality of interceptors, wherein the plurality of interceptors are utilized by the container driver to access inbound and outbound web service message, and wherein the initial message context including includes a plurality of parts, wherein each of which part includes corresponding content;

modifying, at the interceptor, the content of one or more of the parts of the initial message context to produce modified message context for the web service, the modified message context including the same plurality of parts as the initial message context but with the content of one or more parts differing from the initial message context;

returning the modified message content to the container driver;

receiving, at an invocation handler, the modified message context from the container driver, wherein the invocation handler

passes the parameters from the modified message context to the target of the request.

processes values returned from the target, and

passes the values to the container driver such that the container driver can formulate a response to the invoke request;

storing, at an invocation context, context data for processing the invoke request including a conversation ID, a message sequence number, and a security token, wherein the invocation context is an inheritable, thread local object which is accessible to the protocol adapter, interceptors and invocation handle, and wherein the invocation handler controls read/write access to the invocation context;

passing, from the invocation handler to a target of the request, parameters from the modified message context;

processing, at the invocation handler, values returned from the target;

passing the values from the invocation handler to the container driver; and

formulating, at the container driver, a response to the invoke request.

21. (Previously Presented) The storage medium of claim 1, wherein the plurality of parts for the initial message context and the plurality of parts for the modified message context each include a request message and a response message with a difference between the initial message context and the modified message context being the content of one or more of these parts.

22. (Canceled)

23. (Previously Presented) The storage medium of claim 1, wherein the interceptor reads and writes information on the invocation context.

24. (Previously Presented) The storage medium of claim 1, wherein the initial message context and the modified message context each include transport information, wherein the transport information comprises information specific to the transport over which the request came, and over which the response is sent.

25. (Previously Presented) The storage medium of claim 1 wherein the protocol adapter receives data in response to the invoke request and returns the data to the client.

26. (Previously Presented) The storage medium of claim 25 wherein the protocol adapter converts a message format of the data in response to the invoke request to match the message format of the invoke request.

27. (Previously Presented) The method of claim 11 wherein the protocol adapter receives data in response to the invoke request and returns the data to the client.

28. (Previously Presented) The method of claim 27 wherein the protocol adapter converts a message format of the data in response to the invoke request to match the message format of the invoke request.

29. (New) A storage medium including software system applications for providing access to web services, comprising:

a protocol adapter that

intercepts a web service invoke request wherein the invoke request is a web service message that has a message format and includes parameters,

converts the message format of the invoke request,

creates an initial message context including the invoke request, a placeholder for a response, and information about a transport, and

routes the invoke request with the initial message context to an appropriate web services container based on a target of the invoke request;

a container driver, at the web services container, that receives the invoke request and initial message context from the protocol adapter;

a plurality of interceptors, utilized by the container driver to access inbound and outbound web service messages;

wherein the container driver forwards the initial message context to one of the plurality of interceptors that

receives the initial message context which includes a plurality of parts, wherein each part includes corresponding content,

modifies the content of one or more of the parts of the initial message context to produce modified message context, and

returns the modified message context to the container driver;

a plurality of codecs utilized by the container driver to perform data binding;

an invocation handler that receives the modified message context from said container driver, passes the parameters from the modified message context to the target of the request, processes values returned from the target, and passes the values to the container driver, such that the container driver can formulate a response to the invoke request; and

an invocation context that stores context data for processing the invoke request including a conversation ID, a message sequence number, and a security token, wherein the invocation context is an inheritable, thread local object which is accessible to the protocol adapter, interceptors and invocation handler, and wherein the invocation handler controls read/write access to the invocation context.